

SWAN LAKE

NARRATIVE REPORT

JANUARY - DECEMBER 1965

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Narrative Report
Swan Lake National Wildlife Refuge
January - December, 1965

PERMANENT PERSONNEL

Robert H. Timmerman	Refuge Manager
William H. Thornsberry (Transferred 6/30)...	Wildlife Tech.
Bennie M. Hull (EOD 8/1/65)	Wildlife Aid
Marvin F. Lentz	Refuge Clerk
Benny N. Howerton	Operator-General

TEMPORARY EMPLOYEES

Floyd A. Holland	Laborer, Farm
Roy T. Warren	Laborer, Farm
Ervin Windsor	Laborer, Farm

I. GENERAL

A. Weather Conditions

	Month	Precipitation		Max. Temp.	Min. Temp.
		Normal	Snowfall		
January	<u>6.20</u>	<u>1.64</u>	<u>7</u>	<u>54</u>	<u>-16</u>
February	<u>.39</u>	<u>1.79</u>	<u>4</u>	<u>65</u>	<u>-6</u>
March	<u>2.18</u>	<u>2.57</u>	<u>10</u>	<u>60</u>	<u>8</u>
April	<u>2.80</u>	<u>3.72</u>	<u> </u>	<u>87</u>	<u>32</u>
May	<u>2.50</u>	<u>4.52</u>	<u> </u>	<u>89</u>	<u>37</u>
June	<u>2.51</u>	<u>4.87</u>	<u> </u>	<u>92</u>	<u>50</u>
July	<u>6.63</u>	<u>3.92</u>	<u> </u>	<u>94</u>	<u>56</u>
August	<u>5.09</u>	<u>3.67</u>	<u> </u>	<u>94</u>	<u>50</u>
September	<u>9.72</u>	<u>4.88</u>	<u> </u>	<u>89</u>	<u>42</u>
October	<u>.46</u>	<u>2.72</u>	<u> </u>	<u>82</u>	<u>29</u>
November	<u>.93</u>	<u>2.32</u>	<u> </u>	<u>75</u>	<u>13</u>
December	<u>1.53</u>	<u>1.65</u>	<u>3.5</u>	<u>68</u>	<u>15</u>
Annual Totals	<u>40.94</u>	<u>38.27</u>	<u>24.5</u>	Extremes <u>94</u>	<u>-16</u>

The weather data tabulated above were collected at the official weather station on the Fountain Grove Wildlife Area located about eight miles northwest of Swan Lake.

New Years day was a wet one in this part of Missouri. About four inches of rain fell throughout this general area. The Refuge Manager and the Wildlife Technician spent most of the day opening valves to pass flood waters through as quickly as possible.

One extremely cold period was experienced in late January and early February with temperatures down to 15 and 16 degrees below zero. The spring months were abnormally dry allowing all crops to be planted on schedule. Rain was distributed well over the summer months and no periods of extremely hot weather were experienced. We recieved almost ten inches of precipitation during September, but the remainder of the fall was dry and pleasant. Precipitation for the year was 2.67 inches above normal.

B. Habitat Conditions

1. Water

Heavy rains on January 1st started the year off with a flood that crested at 32 feet on the Grand River. All valves were opened on January 1 and never completely closed again until April 22.

The spring drawdown on Swan and South Lakes was begun on May 14. South Lake was down to summer elevation by May 17th. It took until June 16th to get Swan Lake down to the desired elevation as the water must all pass out through one 4' x 4' structure. Water from Silver Lake was used during the summer to flood irrigate moist soil food producing plants.

Heavy rains throughout the area during September caused all creeks and rivers to flood. We experienced not one but a series of three floods. Elk and Turkey Creeks flooded just putting the water within 18 inches of going over the Silver Lake levee. Yellow Creek came next and almost took out Kling's levee which would have put more water into Silver Lake. If this had taken place we would have had to cut a hole in the Silver Lake levee to save the remainder of the levee in areas where fill is not available. The Grand River reached a crest of 36 feet about three days later. Water was within eight inches of going over the entrance road and completely covered No. 5 and South Pool levees. All refuge grown crops were under water except for about 250 acres of corn on the hill at headquarters. Water levels in all pools equalized quite rapidly and very little damage was done to levees and structures.

The remainder of the year was dry and water levels returned to about normal.

2. Food and Cover

The following table compares food production during the past eleven years.

Foods Available For Waterfowl 1955-1965

Year	Bushels of Grain*	Acres of Wheat	Acres of Legumes	Acres of** Moist Soil Foods
1955	11,450	718	-	400
1956	27,330	712	-	400
1957	29,800	967	-	400
1958	4,920	1,276	15	400
1959	34,750	979	212	2,000
1960	16,000	1,250	204	2,285
1961	21,180	223	638	2,200
1962	26,280	687	487	2,200
1963	52,600	667	525	2,200
1964	29,240	775	427	2,200
1965	86,300	660	250	2,200
Average	30,850	810	250	1,535

* Includes corn, milo and rice.

** Includes mainly wild millet, chufa, tame millet, and smartweed.

More grain was available for the waterfowl this year than in any year during the history of the refuge. The refuge staff grew 420 acres of corn that averaged 120 bushel per acre and 212 acres of milo that averaged over 100 bushel per acre. The remainder of the grain resulted from permittee farming. Precipitation was recieved just when it was needed to produce high yields. The flood during September covered all but 250 acres of the corn. However, the grain was mature and was not damaged to any great extent. The flood water was comparatively free from silt and did not seal the husks on the corn causing it to sour. The milo stood up well and although the husks turned black the grain did not mold.

We had poor success with legume plantings this year. There was enough moisture to germinate the seed and start it growing, but not enough to carry it through the critical third leaf stage. Ladino clover did the best followed by alsike and alfalfa produced the poorest stand. The "second year" Ranger alfalfa provided the only green food available for the geese late in the season and was heavily utilized.

The refuge staff ended up planting 360 acres of wheat during August. This included about a hundred acres that had been in clover. The State only had about 300 acres of wheat seeded when the flood stopped the operation. As the flood waters receded they seeded some wheat and rye from a plane. The geese were on these seeded areas and what seed wasn't eaten was trampled so badly it didn't grow. The water didn't kill the wheat that was about six inches tall when the flood came. However, the geese followed the water as it receded and what wheat they didn't eat was puddled into the mud.

Usually when the geese first arrive they feed almost exclusively on green wheat. This year as a result of the flood they swam into corn

fields in the interior of the refuge and started using corn in September. The geese switched to milo as soon as the most readily available corn was gone. Geese and ducks fed on milo until it was completely utilized before returning to corn and other foods. Some corn was still available at the close of the period.

II WILDLIFE

A. Migratory Birds

Ducks

A few mallards used the refuge throughout the winter. The population would drop to a few birds during cold weather and jump back to several thousand when the weather became warmer and the lakes thawed out.

The peak spring population was reached during the third week in March when 30,000 mallards, 20,000 pintails, and lesser numbers of 14 other species of ducks were using the refuge.

The summer population, mostly wood ducks, was estimated at slightly over 300 ducks. Very few broods were observed. Again as in 1964 the broods that were seen were in the borrow pit along the south end of Silver Lake levee.

The first significant flight of blue-winged teal and pintails arrived August 26 and 27. Large numbers of blue-wings were using this part of Missouri during the mid-September flood. They were scattered widely over newly flooded bottomlands and were not concentrated on the refuge.

The fall mallard population peaked at 75,000 in early December. At the end of the year an estimated 27,000 mallards along with about 200 pintails and 300 green-winged teal were still using the area.

Geese

The Canada goose population remained at about 70,000 on or in the vicinity of the refuge during the winter. During extremely cold periods the refuge population would drop to a few thousand, but would bounce right back up again when the weather warmed up. About 600 blue and snow geese put in an appearance the second week in February and stayed two weeks before moving on. The actual blue and snow migration began the second week in March. The first white-fronts were seen March 20 but the population only built up to slightly over 100 birds. Most of the geese had gone north by the middle of April. About 200 geese, including cripples stayed all summer on Silver Lake.

The fall migration of Canada geese began on September 18 with the arrival of about 200 birds. The first large number of geese arrived

during the period of September 23 through 27. This was not a spectacular migration, but the geese just kept drifting in. Another migration began October 1 and continued through the 4th. The peak population of 119,000 Canada geese was reached during the week of November 7. There were still 89,000 Canada geese counted during the last aerial inventory during the year.

The first fall migrant blue and snow geese arrived the last week in September. Blues and snows peaked at 17,000 during the middle of October. The count during the last week in December was 7,000 and it appears that at least some of them may stay in the general area all winter. This population consists of about 60% blue geese which leads us to believe they are not connected with the Squaw Creek flock which is composed of about 60% white geese.

Very few white-fronted geese stopped here this fall. The peak population was estimated at 50 during late October and November. Lesser Canada geese were quite numerous. It is impossible to separate these geese during inventories, but the population was estimated at several thousand.

Waterfowl use for the fall period over the past eleven years is shown in the table below.

Number of Days Use

<u>Year</u>	<u>Canada Geese</u>	<u>Other Geese</u>	<u>Ducks</u>	<u>Coots</u>	<u>Totals</u>
1955	4,692,100	170,100	7,691,500	90,800	12,644,500
1956	3,390,300	354,900	4,097,700	52,700	7,895,600
1957	2,449,000	36,300	4,289,300	32,450	6,807,050
1958	2,505,700	198,600	2,131,400	14,500	4,850,100
1959	3,364,825	468,489	4,363,621	373,800	8,570,735
1960	5,738,300	358,610	3,400,925	317,453	9,815,828
1961	4,546,580	428,953	4,393,500	85,750	9,454,783
1962	7,113,600	657,300	1,344,360	107,100	9,222,360
1963	8,831,375	969,920	4,677,750	230,300	14,709,345
1964	7,980,700	687,050	4,931,220	175,350	13,774,320
1965	9,122,400	831,180	5,845,560	321,440	16,120,580

A look at the above table reveals that records were met for Canada goose use and total waterfowl use during 1965. This can partly be accounted for by the mild fall and the fact that the goose season ran practically to the end of the period (December 28). However, the fact that the refuge had more food available than ever before was probably the largest contributing factor. Comparative Canada goose population counts are shown in the following tables.

SWAN LAKE COMPARATIVE POPULATION COUNTS

CANADA GEESE

<u>Date</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>
Sept.	2,500	2,500	107	620	100	230
Oct.	55,000	4,600	3,675	41,000	12,650	50,500
	96,000	54,850	21,500	44,000	46,350	73,500
	133,500*	35,180	36,500	48,000	46,130	86,850*
	96,000	35,000	No Count	53,000*	52,000	81,000
Nov.	90,000	55,000*	42,000	41,000	57,000*	55,500
	No Count	55,000	34,000	31,700	53,555	50,000
	57,000	41,000	22,000	19,365	33,905	51,530
	49,000	35,000	20,000	19,395	37,055	42,500
Dec.	21,000	36,000	23,000	14,000	34,620	No Count
	15,000	31,745	18,000	20,000	No Count	29,133
	12,000	12,000	18,000	20,000	No Count	No Count

* Peak Populations

SWAN LAKE COMPARATIVE POPULATION COUNTS

CANADA GEESE

<u>Date</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>
Sept.	150	8,000	1,800	50,025	32,050
Oct.	24,750	13,325	33,725	85,150	57,650
	48,275	17,628	72,895	99,050	90,350
	73,600*	74,300	111,800	121,450*	106,650
	70,955	84,000	130,225*	115,200	
	70,300	93,000	115,300		
Nov.	71,600	107,950	122,000	119,000	89,980
	62,465	95,000	101,650	76,000	119,350*
	No Count	118,200*	98,700	88,000	79,750
	54,400	75,200	No Count	97,050	85,850
				66,500	81,750
Dec.	54,900	95,200	124,150	45,530	83,250
	39,500	102,500	84,650	45,230	110,250
	38,550	60,900	56,500	54,065	104,650
		28,000 Mo. River			86,555
Jan.		77,200	80,000		

*Peak Populations

Our population figures are based on aerial counts taken by Missouri Goose Biologist Vaught at weekly intervals. Aerial photographs and counts were made by Flyway Biologist Jansen and Hanson in November. We have not yet received the final results of these photographs, but they seem to be in fairly close agreement with Biologist Vaught's figures.

Waterbirds

The first white pelicans arrived April 7 during the spring migration and the last birds had migrated by early May. Two pelicans were observed in late July and small numbers of birds were seen during the remainder of the summer. The major fall migration took place on September 10 and 11 when the population built up to 3,000. Fishing must have been poor during the flood and the bulk of the pelicans moved out much earlier than normal. One pelican, probably sick or injured remained through the end of the period.

The first large spring migration of pied-billed grebes was on April 5. The fall population hit a peak of about 40 in September.

Sora rails were far less abundant than normal. This was probably a direct result of the September flood.

Mourning Doves

A large flight of doves passed through on March 29. The first active nest was found April 9th. Shooting was excellent during the early part of the dove season. Local flocks built up in some areas to provide more late shooting than usual.

B. Upland Game

Coveys of bob-white had become established over quite a large portion of the refuge. Floods drove them out of all the lower areas. They apparently have not moved back into these areas as very few birds were observed during the fall and winter. The population off the refuge was good, but hunting was tough due to the abundance of food and cover.

One hen pheasant was observed in the headquarters area several times during late September and October, but has not been seen since. A few birds may still be found along the north boundary of the refuge but none were observed during the period.

No pinnated grouse are known to exist in this general area. We would still like to make another release in the prairie grass area in the east part of the refuge, but have been unable to get the birds.

C. Big Game Animals

The white-tailed deer population on the refuge is probably still

increasing slightly. We estimate that approximately 300 were using the refuge at the close of the period. Several were killed by cars on the highways along the east and north side of the refuge. We may have to hold a special deer season on the refuge if these animals become too much of a problem.

D. Fur Animals, Predators, Rodents and other Mammals

The raccoon population is lower than it has been for several years. We had no trouble with them digging out corn during the planting season. However, we did spread corn around to edges of the field to keep them from digging. Even though the population is down they still probably compete with wood ducks for nesting cavities.

The beaver population is increasing slightly. We like these animals and will leave them alone so long as they confine their activities to areas where they do not interfere with refuge operations. Three colonies are located where they are not compatible and will have to be controlled. They are located on a drainage ditch east of Silver Lake, at the mouth of Elk Creek below No. 3 levee, and along the railroad track below the S and T hunting area.

Red fox and coyote populations remain low. Coyotes are probably more numerous than foxes judging from observations. The refuge population is probably lower than the population on private land northeast of here.

The mink and muskrat populations are low. Muskrats may be increasing slightly, but it certainly is no population explosion.

Two or three badgers have been killed in the vicinity of the refuge. They are apparently a new animal for this area as many residents did not know what they were.

E. Hawks, Eagles, Owls and Crows

The bald eagle population remained at about 55 throughout the winter. All birds migrated in the spring and we noted no indication of any attempts to nest here. The first eagle of the fall migration was an adult observed September 29. The population rose to a mid-winter inventory of 24 adults and 33 immatures. These eagles feed primarily on the carcasses of dead geese. Tests have shown that the pesticide residue in the tissues of these geese is very low. This would indicate that this portion of the eagle population is not rapidly building up a high residue content at least during the winter months. What better use could be made of geese that die as the result of crippling, lead poisoning, etc. than to feed our national bird?

Nothing significant was noted concerning hawks, owls or crows.

F. Fish

The channel catfish, red-eared sunfish, and large-mouth bass stocked in Silver Lake during 1964 are all growing at a good rate. The catfish should be good individual serving size by the 1966 fishing season. There is a well established rough fish population back in the lake and we are curious to see what happens to the bass and sunfish population.

The refuge was open to fishing from April 1 through September 10. Some roads were muddy and travel had to be restricted the first two weeks of the season. Some nice strings of channel catfish were caught in Swan Lake early in the season. Later in the season the borrow pit below the Silver Lake levee seemed to be the best place to fish. Very few crappies were taken this year.

No seining season for removal of rough fish was held this year. Success was so poor during 1964 we decided it was not worth the effort this year. A seining season will be held again in 1966.

I. Disease

We had no known loss of geese from crop impaction this year. A few mallards were lost apparently to lead poisoning late in the winter. We find a few of these ducks almost every year. It probably results from shot picked up on private duck clubs near the refuge.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

The north side of the east entrance road levee was resloped and seeded to a mixture of grass and clover. The low water crossing on Elk Creek behind secondary headquarters was rocked to make land across the creek accessible for farming. Rock was placed under the drop culvert on the large pond behind secondary headquarters to remedy an erosion problem.

Worked with the State under force account raising the patrol road from the junction of Levees 1 and 3 to the W parking lot using their TD-18 and our D-7 with scrapers. The objective was to raise the levee high enough to prevent Yellow Creek from going over it and washing it out during a flood. We did not go quite high enough as the water went over it in September and took out a short portion of it that will have to be rebuilt.

B. Plantings

Cultivated Crops

A total of 745 acres of corn was grown on the refuge. The refuge staff took care of 420 acres and the remaining 325 acres was grown by permittees. This was a great corn year in this area. Refuge corn fields averaged 120 bushel per acre with the best field yielding 179 bushel per

acre. Some permittee grown corn was as good as ours, but the average yield was considerably less. All of the refuge corn ground had 100 pounds of nitrogen applied as anhydrous ammonia pre-plant and 100 pounds of 8-32-16 starter fertilizer put on at planting time. It will probably be many years before we have another corn crop to equal this one.

Permittees grew 23 acres of milo plus 212 acres grown by the refuge staff. None of the refuge grown milo was harvested so we estimated a yield of 100 bushel per acre. Most people felt that we were under estimating the yield and stated that ours would compare favorably with harvested fields that produced 140 bushel per acre. This milo was grown on low ground that is slow to dry in the spring and quite prone to flood. These fields were in wheat last year and did not require plowing. It was just disced twice prior to planting and cultivated twice.

Permittees raised 114 acres of beans all of which were harvested except for a small acreage ruined by flood waters.

A total of 545 acres was in legumes for goose browse. This included 350 acres of Ladino clover, 120 acres of alsike clover, 55 acres of Ranger alfalfa, and 20 acres of Strawberry clover. We had a poor stand in all legume fields except for 45 acres of "second year" alfalfa which produced a lot of green foliage and was used heavily by the geese late in the season. The Strawberry clover was apparently a total loss, but we will wait another season before giving up on it.

We planted 50 pounds of Garrison creeping foxtail in August. The geese used the area for a long period of time. We will have to wait until next year to see if we have an established stand.

C. Collections and Receipts

All of our seed wheat had to be hauled from DeSoto Refuge this year. Normally we can get at least part of it from Squaw Creek, but this year they were flooded out and also had to haul wheat from DeSoto.

D. Control of Vegetation

About 250 acres of corn were band sprayed over the row using one pound atrazine per acre for control of giant foxtail. Results were excellent.

All legume fields were clipped to control weeds and provide a succulent growth of vegetation for the geese in the fall. Roads and levees were mowed to control woody vegetation and allow them to blow free from snow during the winter.

E. Planned Burning

All planned burn areas were too wet to do anything with.

F. Fires

Hunters carelessly burned one wooden blind during the goose season, but no damage resulted to refuge property.

V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Blue-winged Teal Banding

The big push was on to get as many teal banded as possible prior to the experimental season. We finally got in the act late and succeeded in banding 167 blue-wings. This doesn't sound like very many birds, but under the circumstances we thought we did fairly well. The first strike against us was the abundance of natural food available on the Swan Lake mud flats where the teal were concentrated. We used a combination of wheat and millet to successfully attract some birds. When we trapped from the shoreline we lost some birds to mink, even though the traps were run at about sunset. When we moved the traps to the open water side of the mudflats we were troubled with raccoons. These traps also make excellent carp catchers. When the water raised enough for the fish to swim into them we often had traps full of carp instead of teal.

B. Canada Goose Banding

A pre-season sample of 1,200 Canada geese were banded prior to the season opening on October 20th. The age and sex composition of this sample ran as follows: 346 adult males, 212 adult females, 296 immature males, 342 immature females, and four unknown. The young to adult ratio was 1.14.

We banded and released 905 adults while catching the immatures for the transplant. Not all adults were counted or banded so we have no age ratio for this period.

We processed a post-season sample of 1,640 Canada geese. The age and sex composition ran as follows: 356 adult males, 328 adult females, 474 immature males, and 481 immature females. This gives us a 1.40 young to adult ratio for the post-season sample.

This is the second year that the post-season sample has shown a higher young to adult ratio than the pre-season sample. Again this year the post-season sample was caught in a few days (over a thousand in one day). This probably accounts for biased data from a non-representative sample. However, we cannot rule out the possibility that we may have a major turnover in the goose population between the times that the two samples are taken. We do know that we had an increase in the goose population during December and that at this time there was an increase in the young to adult ratio in the kill. We also know that in January 1966 our population increased by 10 to 12 thousand. Just a day or two prior to our recording this increase they

noted a loss of 14 to 15 thousand geese from the Missouri River near Pierre, South Dakota. These late arrivals are light breasted large geese. It just may be that earlier arriving geese are from the Hudson Bay area and that we have a large number of geese arriving later in the season from other nesting grounds. Much more work needs to be done before any conclusions can be drawn, but we may find that the sub-species composition of the Eastern Prairie Goose Flock is quite different than it was, or at least what we thought it was, in the past.

C. Blue and Snow Goose Banding

We mentioned earlier in this report that we have reason to believe that the blues and snows using Swan Lake are not associated with the Squaw Creek flock. We have about 60% blues in our flock while Squaw Creek has about 60% snows. We used all the bands we had on hand to try to get some information on these geese. Only 389 were banded this year, but we will try to get a larger number next year.

D. Canada Goose Transplant

This was the third year of a three year program of transferring Canada geese from Swan Lake to refuges in Arkansas and Louisiana in an attempt to encourage geese to migrate and winter further south than Swan Lake. Over the three year period there should have been enough birds transplanted to determine if it can be successful.

The Canada goose transplant program ran smoothly again in 1965. We had trouble with blue and snow geese taking over the silo trap site during the later part of the trapping period thus delaying the shipment of the last load of geese to Lacassine Refuge. We ran into a period of bright moonlight and had to successfully resort to trapping at night.

The men helping out during the 1965 transplant included: Jim Bartee, Holla Bend Refuge 10/24 - 11/14; Dan Frazer, Wapanocca Refuge 10/24 - 10/28 (called home by his father's death); Dave Olsen, Lake Andes Refuge 10/26 - 11/14; Don Young, Lacreek Refuge 10/26 - 11/14; and Jim Hansen, Mingo Refuge 10/31 - 11/9. These men are to be complimented on a job well done. They put in long hours of hard work, and we hope they gain very valuable experience.

Very few geese were lost in transit during this years transplant. While transporting 4,755 birds only 15 died. This compares with 32 lost during the transplant in 1964 and 78 in 1963. Almost all of the geese were caught under skirted nets this year which at least partially accounts for the better condition of the birds.

Plastic neck markers were placed on one-half of the geese shipped to southern refuges this year. The colors were as follows: Holla Bend red, White River - Green and Lacassine a combination yellow - red.

The following tables show the loading dates and the number of geese lost in transit.

<u>Date</u>	<u>Destination</u>	<u>Number</u>	<u>Age</u>	<u>Number Lost In Transit</u>
10/28	White River	750	I	4
11/1	Holla Bend	750	I	3
11/4	White River	750	I	3
11/8	Holla Bend	750	I	2
11/14	Lacassine	660	I	
		90	A	3
11/29	Schell-Osage	345	Trap Run	0
11/30	Schell-Osage	350	Trap Run	0
12/1	Schell-Osage	310	Trap Run	0
		<u>4,755</u>		<u>15</u>

The Holla Bend transplants appears to be by far the most successful. White River is less encouraging and Lacassine shows almost no promise to date.

E. Blood Sampling Canada Geese

Dr. D. O. Trainer and two students from the University of Wisconsin Department of Veterinary Science took blood samples from 430 Canada geese. These samples will be used to study diseases present in a seemingly healthy flock of geese.

VI PUBLIC RELATIONS

A. Recreational Uses

Recreational use continues to increase each year. The total estimated number of visits increased from 64,000 in 1964 to 69,000 in 1965. Over 50,000 visits are accounted for by people wanting to see, hear, and photograph geese. Goose hunting accounts for almost 10,000 visits and fishing about 7,000. Motor boaters and water skiers continue to try to get use of one of the refuge lakes.

B. Refuge visitors follow on next few pages.

B. Refuge Visitors

<u>Name</u>	<u>Address</u>	<u>Purpose of Visit</u>	<u>Date</u>
John Hague	FWS - St. Joseph	Law Enforcement	1/21/65
Jim German	MCC - Fountain Grove	Dozer Blade	1/25/65
Earl Welch	MCC - Schell-Osage	Goose Crates	1/27/65
Mike Milonski	MCC - Jefferson City	Pick up Geese	2/16/65
Gene Wade	FWS - Minneapolis	Survey	2/17-27
George Dorland	FWS - Minneapolis	Survey	2/17-27
Rick Severson	FWS - Minneapolis	Survey	2/17-27
Dick Vaught	MCC - Columbia	Trap Pesticide Geese	2/20-24
Mike Milonski	MCC - Jefferson City	Return Geese	3/1/65
John Goddard	MCC - Jefferson City	Crippled Geese	3/8/65
Mike Milonski	MCC - Jefferson City	Crippled Geese	3/8/65
Lynn Coy	Mo. State Highway Patrol	Visit	3/9/65
Gabe Hiley	MCC - Jefferson City	Plan, new levee	3/9/65
Jim German	MCC - Fountain Grove	Plans, new levee	3/9/65
Harris White	MCC - Salisbury	Shell Crackers	3/16/65
Upton Henderson	University of Missouri	Economic Survey	3/19/65
Hickman Highschool Class	Columbia, Mo.	See Waterfowl	3/20/65
Dr. Wm. Elder and Class	Univ. of Missouri	See Waterfowl	3/27/65
Lynn Coy	Mo. State Highway Patrol	Fishing	4/9/65
Dr. Thompson	Univ. of Missouri	See Waterfowl	4/11/65
Charles Gish	FWS - Patuxent Refuge	Pesticide Study	4/13/65
John Hague	FWS - St. Joseph	Crop Depredations	4/14-15
Dr. Tom Baskett	FWS - Columbia, Mo.	See waterfowl	4/17/65
Dick Vaught	MCC - Columbia, Mo.	Goose Browse Plantings	4/21/65
Max Hamilton	MCC - Soil Conservation	Goose Browse Plantings	4/21/65
Jim German	MCC - Fountain Grove	Goose Browse Plantings	4/21/65
Jim German	MCC - Fountain Grove	Farming Plans - PHA	5/10/65
Fred Veach	MCC - Kirksville	Bring Tapewriter	5/13/65
D. O. Rettinger	MRBS - Billings, Mont.	Fish & Wildlife	6/9/65
Harris White	MCC - Salisbury, Mo.	Deer Kill Report	6/10/65
Harold Burgess	FWS - Mound City	Visit	6/16/65
John Hague	FWS - St. Joseph	Pick up dove traps	6/28/65
Wayne Sanders	FWS - Jefferson City	Soil Samples Trap Site	7/13/65
Paul Osborn & 10 Students	Iowa Wesleyan College	Tour refuge	7/19/65
Bob Dunkeson	MCC - Jefferson City	Public Hunting	7/21/65
Jim German	MCC - Fountain Grove	Public Hunting	7/21/65
Dr. Joyce Deweese	Marceline, Mo.	Info on Consv. Sticker	7/23/65
George Brakhage	MCC - Columbia	Wood Duck Nesting Boxes	7/29/65
Jim German	MCC - Fountain Grove	Levee construction	8/2/65
Otto Johnson	Browning, Missouri	Goose Hunting 1965	8/3/65
Ralph Hayden	Dept. of Agriculture	Grasshoppers	8/9/65
George Brakhage	MCC - Columbia	Teal trapping	8/11/65
George Brakhage	MCC - Columbia	Wood Ducks	8/12/65
Frank McGilvray	FWS - Patuxent	Wood Ducks	8/12/65
Dick Vaught	MCC - Columbia	Goose Trapping - 1965	8/13/65

Refuge Visitors - continued

<u>Name</u>	<u>Address</u>	<u>Purpose of Visit</u>	<u>Date</u>
Paul Richie	U. of Mo. Athletic Dept.	Tour area	8/13/65
Coval Gann	MCC - Chillicothe, Mo.	Law Enforcement	8/13/65
Floyd Fickie	MCC - Milan, Mo.	Law Enforcement	8/13/65
John Hague	FWS - St. Joseph	Law Enforcement	8/16/65
Wayne Sanders	FWS - Jefferson City	Law Enforcement	8/16/65
Larry Campbell	Florida Game Comm.	Visit	8/16/65
Sammie Lewis	MCC - Montrose Area	Visit	8/17/65
John Hague	FWS - St. Joseph	Law Enforcement	8/31/65
Paul Ban	MCC - Brookfield	Goose Banding	9/8/65
Dick Vaught	MCC - Columbia	Goose Trapping	9/8/65
Jim German	MCC - Fountain Grove	Gravel Tickets	9/9/65
Harry Grandell	FWS - Washington	Planning Inspection	9/15/65
Edward Crozier	FWS - Minneapolis	Planning Inspection	9/15/65
Paul Ban	MCC - Brookfield	Tour Area	9/15/65
Dick Wattersten	RBS - Minneapolis	Tour Area	9/19/65
Wayne Sanders	FWS - Jefferson City	Teal Season	9/23/65
Harris White	MCC - Salisbury	Check refuge by boat	9/24/65
Jim German	MCC - Fountain Grove	Flood damage	9/27/65
Ted Shanks	MCC - Jefferson City	Aerial seeding PHA	9/29/65
Jim German	MCC - Fountain Grove	Aerial seeding PHA	9/29/65
Wayne Sanders	FWS - Jefferson City	Law Enforcement	9/29/65
Ralph Von Dane	FWS - Peoria, Ill.	Goose depredations	10/4-5
Dave Keefe	Kansas City A's	Visit	10/8/65
Melvin Routh	Chariton County Agent	Hunting information	10/15/65
Dick Vaught	MCC - Columbia	Goose Trapping	10/15/65
Morgan Wilson	FWS - Sikeston, Mo.	Law Enforcement	10/17-24
Ralph Von Dane	FWS - Peoria, Ill.	Law Enforcement	10/18-19
Wayne Sanders	FWS - Jefferson City	Law Enforcement	10/18-24
Miles Camery	FWS - Anna, Illinois	Law Enforcement	10/19-23
Ted Shanks	MCC - Jefferson City	PHA Operations	10/20/65
Bob Dunkenson	MCC - Jefferson City	PHA Operations	10/20/65
Bob Delaney	MCC - Commissioner	PHA Operations	10/20/65
W.E. Harine	Ames Iowa Radio Station	Cut tape for "Outdoor Iowa"	10/21/65
Jack Wallace	MCC - Brookfield	Law Enforcement	10/22/65
Charley Guthrie	MCC - Brookfield	Law Enforcement	10/22/65
Cliff Reisinger	MCC - Macon, Mo.	Law Enforcement	10/22/65
Willard Coen	MCC - Peck Ranch Area	Visit-	10/26/65
Jim Bartee	FWS - Holla Bend Refuge	Trap Geese	10/24-11/14
Dan Frazier	FWS - Wapanocca Refuge	Trap Geese	10/24-28
Kim Dybsetter	FWS - DeSoto Refuge	Visit	10/25/65
Paul Furgeson	FWS - Union Slough	Visit	10/25/65
Dave Olsen	FWS - Lake Andes	Trap Geese	10/26-11/14
Don Young	FWS - La Creek Refuge	Trap Geese	10/26-11/14
Calvin Fraize	FWS - White River	Haul Geese	10/27-28
T. E. Coker	FWS - White River	Haul Geese	10/27-28
Herb Dill	FWS - Minneapolis	Goose Transfer	10/30-11/1
Dr. Wm. Green	FWS - Winona, Minn.	Goose Transfer	10/30-11/1
Dennis Holland	FWS - Holla Bend	Goose Transfer	10/31-11/1

Refuge Visitors - continued -

<u>Name</u>	<u>Address</u>	<u>Purpose of Visit</u>	<u>Date</u>
Ray Cowan	FWS - Holla Bend	Haul Geese	10/31-11/1
Jim Hansen	FWS - Mingo Refuge	Goose Trapping	10/31-11/9
Thomas Reed	FWS - Washington	Inspection	11/2/65
Ray Jensen	FWS - Minneapolis	Inspection	11/2/65
Ross Hansen	FWS - Minneapolis	Aerial Inventory & Photos	11/2-5
Hortin Jensen	FWS - Brigham City, Utah	Aerial Inventory ' Photos	11/2-5
Calvin Fraize	FWS - White River	Haul Geese	11/3-4
Joe White	FWS - White River	Haul Geese	11/3-4
Herb Schwartz	MCC - St. Louis County	Tour Area	11/3/65
Carrol Denny	FWS - Holla Bend	Haul Geese	11/7-8
Odell Woote	FWS - Holla Bend	Haul Geese	11/7-8
Ray Cowan	FWS - Holla Bend	Haul Geese	11/7-8
Dennis Holland	FWS - Holla Bend	Haul Geese	11/6-8
Clifford Caldwell	MCC - Green Area	Bring fluorescope	11/9/65
Charley Schwartz	MCC - Jefferson City	Pictures	11/9/65
Ted Shanks	MCC - Jefferson City	Pictures	11/9/65
Bob Dunkeson	MCC - Jefferson City	Pictures	11/9/65
Calvin Fraize	FWS - White River	Haul Geese	11/10-14
Amos Johnson	FWS - Lacassine	Haul Geese	11/10-14
Pat Collins	NBC - Chicago, Ill.	TV Short "Wild Kingdom"	11/18-21
Warren Garst	NBC - Chigago, Ill.	TV Short "Wild Kingdom"	11/18-22
Mike Milonski	MCC - Jefferson City	Visit	11/18/65
Osal B. Capps	MCC - Jefferson City	Visit	11/18/65
Ted Shanks	MCC - Jefferson City	Visit	11/18/65
Kerwin Hafner	MCC - Jefferson City	Visit	11/18/65
Bob Wells	MCC - Jefferson City	Visit	11/18/65
Jim Fowler	NBC - Chicago, Ill.	Star "Wild Kingdom"	11/19-21
Bob Dienethal	St. Louis, Mo.	Photographer "Wild Kingdom"	11/19-21
Jens Berg	Sweden	Tour refuge	11/19/65
Feld H. Larsen	Denmark	Tour refuge	11/19/65
Harry Stiles	FWS - Minneapolis	Inspection	11/29-12/2
Ed Weinheimer	Chairman, Iowa Commission	Visit PHA	12/1/65
Dr. Kenny	Commissioner - Iowa	Visit refuge & PHA	12/1/65
Mr. Sinning	Commissioner - Iowa	Visit refuge & PHA	12/1/65
Earl Rose	Asst. Director, Iowa	Visit refuge & PHA	12/1/65
Bob Barrett	Supt. of Game, Iowa	Visit refuge & PHA	12/1/65
Dick Vaught	MCC - Columbia	Guide Iowa Group	12/2/65
Harry Pinkham	FWS - State of Maine	Enforcement work	12/2/65
R. David Purinton	FWS - Minneapolis	Enforcement work	12/2/65
John Hague	FWS - St. Joseph ^{MIN.}	Enforcement work	12/2/65
Harry Pinkham	FWS - State of Maine	Enforcement work	12/8/65
Jack Wallace	MCC - Brookfield	Enforcement work	12/8/65
Monty Burch	MCC - Schell-Osage Area	Road Checks	12/8/65
Gene Kelly	MCC - Osage County	Law Enforcement	12/9/65
Coval Gann	MCC - Chillicothe	Law Enforcement	12/9/65
Marvin Turner	FWS - Minneapolis	Housing Survey	12/10-12
Don Wooldridge	MCC - Jefferson City	Pictures "Wild Kingdom"	12/10/65
Sammie Lewis	MCC - Montrose Area	Road Checks	12/12/65
Dennis Ravelling	INHS - Urbana, Ill.	Canada Geese	12/16-17
T. Van Swearingen	Chillicothe, Mo.	Sex geese	12/29-30

C. Refuge Participation

The refuge open house was held Sunday October 17. Refuge personnel were on duty at the tower all day to pass out literature, answer questions and keep traffic moving. At least 3,550 people in 888 vehicles took the self-guided tour of the refuge. The weather was clear and bright. It was a fine day for observation and photography.

The following is a list of some of the programs and tours provided by refuge personnel. Many tours provided for photographers, newsmen and individuals in the field of conservation are not listed.

3/13	Timmerman	Tour and slide talk to 25 boy scouts from Troup No. 46 Kansas City, Missouri.
3/20	"	Tbur - 70 Biology Club members, Hickman High School Columbia, Missouri.
3/27	"	Tour - Dr. Wm. H. Elder and Ornithology Class of 30, University of Missouri, Columbia, Missouri.
7/19	"	Tour - Professor Goforth and 11 Biology Class members, Iowa Wesleyan, Mount Pleasant, Iowa.
10/10	"	Tour - Fifty "Close To Home" canoe club members, Kansas City, Missouri and Kansas.
10/10	"	Talk and tour 10 boy scouts, Brookfield, Missouri
10/11	"	Slide talk 20 Sorosis MFWC, Marshall, Missouri
10/14	"	Talk and tour 50 - 6th grade class Marceline, Mo.
10/14	"	Tour - Six senior biology students, Brookfield, Mo.
10/16	"	Tour - 20 boy scouts, Independence, Missouri
10/16	"	Tour - 40 Biology Class - Higginsville, Missouri.
10/21	"	Cut tape with W. E. Horine for use on radio station at Ames, Iowa.

Made a movie for Mutual of Omahas TV series "Wild Kingdom" during the middle of November. This series entitled "Challenge To Survival" covered part of the biological aspect of the management of the Eastern Prairie Goose Flock. The film was shown on nation wide TV March 6, 1966. It was cut considerably from what we had planned, but we should have gotten some good publicity from it.

D. Hunting

The goose season opened October 20 and ran the full 70 days through December 28. The total estimated kill in the Swan Lake Zone was 16,879. The maximum kill quota was 25,000.

The geese had established feeding flights off the refuge, as is usually the case with a fairly late opening, and the kill was high the first few days. The kill for the zone during the first two days of the season was 2,271 and 1,834. The kill for the third day was only 743 as the birds seemed to get wise much faster than usual. The total Canada goose kill for the first week was estimated at 7,002 for the zone. The kill went down and stayed down except for minor fluctuations.

The lowest kill for any day was 30 on November 30.

We didn't anticipate that the geese would set this tight on the refuge. We knew that we had a record food supply on the refuge, but didn't feel that this could control the flock to this extent. This was probably the first season on record that there was still corn quite readily available at the close of the season. Other factors that influenced the kill were the unusually mild weather conditions, scarcity of browse in the hunting area due to the flood, and bright moonlight nights that allowed the geese to feed out before and after shooting hours.

Early in the season quite a large percentage of the geese were killed in the morning. Late in the season most of the kill took place in the late afternoon.

Hunting pressure is increasing every year. All the good blinds on private lands were leased by the middle of the summer. Many more non-resident hunters are coming here each year. This year we had 523 non-resident hunters from 16 states and one foreign country (Italy) hunting on the Swan Lake Shooting Area. It would be very difficult to estimate the total non-resident hunters for the zone. The bulk of the non-residents come from Iowa (211), Illinois (167), and Kansas (115).

Hunter interest decreased as the goose kill decreased. By the middle of the season many of the hunters with reservations to hunt on the shooting area did not show up and usually everyone in the waiting line had the opportunity to hunt.

The ten shell limit which was put into effect on the shooting area this year for the first time worked out quite well. There were some violations of course. All apprehensions made for possessing and using more than ten shells were successfully prosecuted including one test case. It did not cut down the reported crippling loss but it did curtail some of the sky-busting. We felt that there were fewer cripples on the refuge after the close of the season than there were other years. Most of the hunters seemed to be in favor of the ten shell limit. Some hunters came in perfectly happy after having shot their ten shells and never touched a goose just blaming themselves for not being able to hit them. Two private clubs put the ten shell limit into effect on their areas this season and many more have expressed an interest in it for next season.

The Canada goose kill for the zone is determined from information obtained at road check stations. We still feel that this information is probably quite accurate. We would like to see a regulation requiring compulsory checking of all Canada geese killed. We would then have more accurate kill data and have a system set up for tagging and a season limit.

E. Violations

The cases on the following page were made on or in the vicinity of the refuge. These are all cases that were prosecuted in State court. Several cases were also prosecuted in Federal court when no State violation was involved.

Safety

Farm Laborer Warren sustained a hernia on April 8 while helping two other employees lift a radiator from the road grader. He had an operation to correct this condition on May 24 and was not able to return to work until July 26 resulting in 43 days lost time.

No other lost time accidents occurred. Our record stood at 260 accident-free days at the end of 1965.

Regular monthly safety meetings were held during the year. Many informal safety meetings were held especially when any new phase of the operation was started. The staff seems to be getting more safety conscious and we hope to improve our poor record.

VIII OTHER ITEMS

Items of Interest

Depredations

When the September flood covered crops on the bottomlands the stage was set for severe depredation problems. We prepared ourselves and were set for a deluge of complaints. It was not nearly as bad as anticipated. Several scaring permits were issued, Zon exploders were demonstrated, and Agent-Pilot Von Dane was here for several days keeping an eye on the situation and hazing waterfowl from problem areas, but very little crop damage resulted from waterfowl depredations. Most of the bottomland crops were eventually harvested except for limited acreages of beans that were ruined by the flood.

Hunting Accident

Dr. Cliff R. Hendricks of Quincy, Illinois collapsed and died of an apparent heart attack in the N parking lot after completing a successful hunt on December 12, 1965. According to his companions he had no history of heart disease. No other serious accidents or incidents occurred during the hunting season.

Staff Changes

Wildlife Technician Thornsberry transferred to the Northern Prairie Wildlife Research Center at Jamestown, North Dakota on July 1, 1965 where he is in charge of maintenance. Mr. Thornsberry was first

V. VIOLATIONS

<u>Violation</u>	<u>No. of Cases</u>	<u>Total Fines</u>	<u>Cost</u>
Early Shooting	8	175.00	88.00
Early Shooting	2	Pending	
Late Shooting	11	310.00	121.00
Late Shooting	3	Pending	
Unplugged Guns	14	195.00	154.00
Unplugged Guns	5	Pending	
Non-resident using resident permit	7	185.00	77.00
Non-resident using resident permit	1	Pending	
Over limit of shells	19	415.00	209.00
Over limit of geese	10	250.00	110.00
Over limit of geese	4	Pending	
Attempting to take over limit geese	2	30.00	22.00
Shooting ducks	3	45.00	33.00
Attempting to take ducks	2	30.00	22.00
Failure to keep wildlife separate	2	30.00	22.00
Over limit of Mallards	1	15.00	11.00
Shooting out of blind	1	25.00	11.00
Hunting without a permit	1	35.00	11.00
Hunting Deer on Refuge	3	75.00	33.00
Refuge Trespass	<u>2</u>	<u>Pending</u>	<u> </u>
	101	\$ 1,815.00	\$ 924.00

employed at Swan Lake in January 1948 as a maintenanceman. He held a series of different titles during the 17 years he was employed here and was at least partially responsible for the development of many wildlife management techniques. Probably the most important was the development and improvement of the cannon net method of trapping waterfowl. Swan Lake lost a good man when Howard transferred, but we are confident that our loss will be more than compensated by benefits gained at the research center.

Bennie Hull was employed as a Wildlife Aid on August 1, 1965 to at least partially fill the vacancy left by Thornsberry. Mr. Hull is a welcome addition to the refuge family and is rapidly becoming a very valuable member of the staff. Ben was employed by the State of Missouri on the Fountain Grove Wildlife Area for six years prior to coming to work here.

Credits For Preparation

Mr. Lentz prepared the visitor list, NR-1, typed and helped assemble the report. The Refuge Manager prepared the balance of the report.

B. Photographs

We must apologize for the lack of photos in this report. We had trouble with the refuge camera twice resulting in the loss of most of our pictures. Some of the pictures attached were taken by the manager with this camera in one of its better moments.

Assistant Manager Bartee from Holla Bend refuge took quite a lot of pictures when ~~he~~ was assigned here to help out with the goose transfer program. Jim was kind enough to let us use some of his pics in this narrative or we would have had practically nothing.

SIGNATURE PAGE

Submitted by:

Robert H. Timmerman
(Signature)
Robert H. Timmerman

Date: March 18, 1966

Refuge Manager
Title

Approved, Regional Office:

Date: 3-22-66

Larry E. Stiles
(Signature)

Asst.

Regional Refuge Supervisor

Wildlife Aid Hull holding a cygnet whistling swan that he caught on No. 5 levee. This bird was sick and symptoms indicated lead poisoning. This swan lived for several days in the cripple pen before it died. We had to include a picture to justify the name "Swan Lake". 65-1-RHT

Farm Laborer Windsor, Operator-General Howerton and Farm Laborer Holland painting the shop doors. These routine maintenance chores are usually preformed when it is too wet to farm. 65-1-RHT



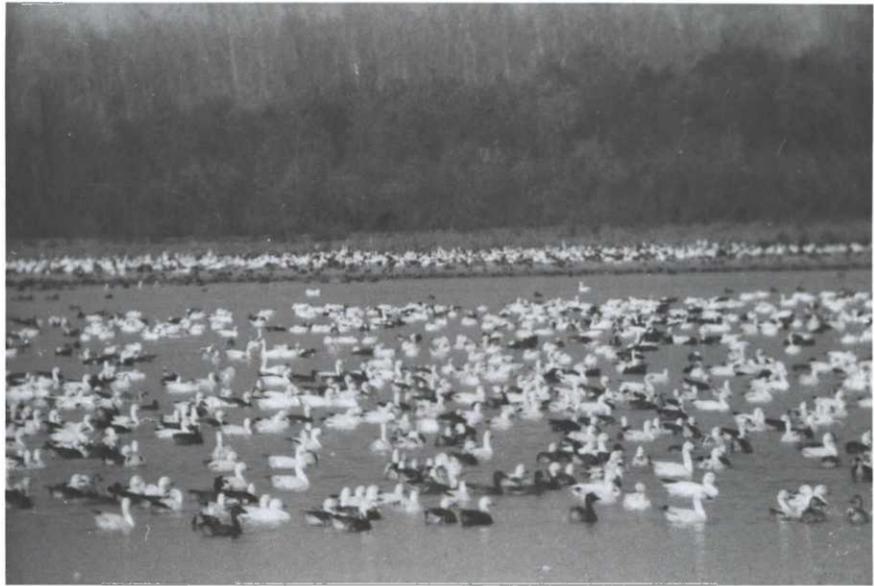
This is Area Manager Jim German with the plane hired by the State to seed wheat and rye on the mud flats as flood waters receded. They had good success on the Fountain Grove Area, but the geese didn't give it a chance here. 65-1-RHT

This fast little plane was designed as a trainer during World War II. The pilot pushed it full speed. He hardly gave the State personnel a chance to catch their breath before he was back for another load on the refuge landing strip. 65-1-RHT



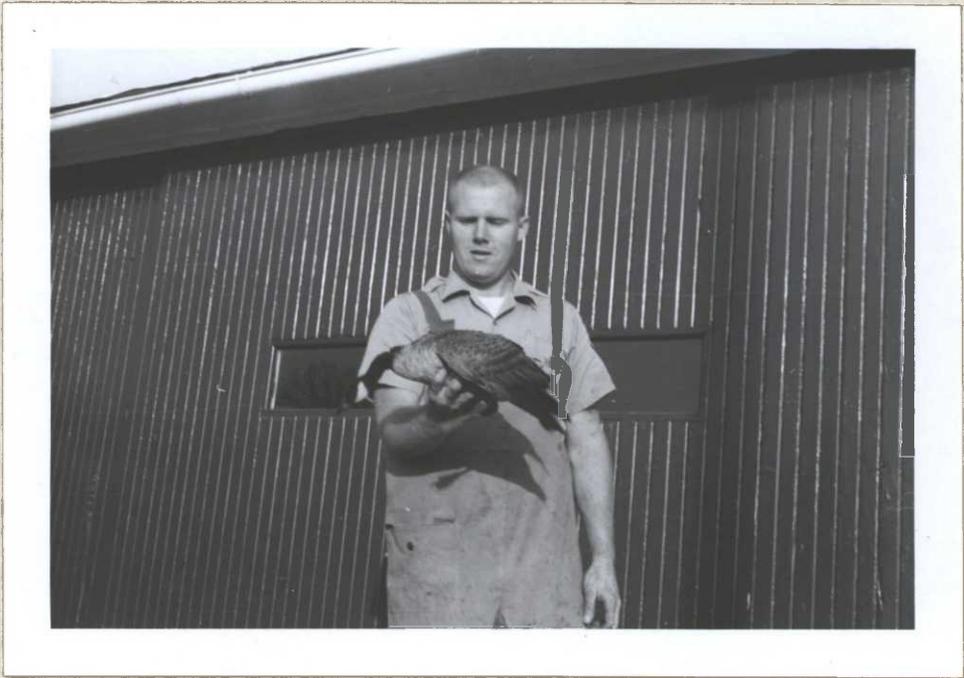
These geese are leaving the South Pool area adjacent to No. 5 levee. They concentrated in this area all fall and kept water open there all winter. Photo by J. Bartee.

These "cob-heads" gave us more trouble than usual this fall. For a period during the transplant program they completely took over the silo trap site. Photo by J. Bartee.



"Big man - Little goose". Refuge Manager Dave Olsen holding a Canada goose caught during the transplant program. This giant weighed less than two pounds.
65-1-RHT

Although you probably can't tell it from the picture, this is a cattle egret. This bird stayed for several days in early November on the Ralph Allen farm north of the refuge. This is only the second known occurrence of a cattle egret in this area. The other observation was just off the east boundary of the refuge in the late 50s. Photo by J. Bartee.



We have several old cottonwoods standing on the refuge to serve as "eagle trees". The eagles really make use of them. Many of these trees are dead and makes nice perches. Sometimes there will be as many as twelve to fifteen in one tree. Photo by J. Bartee.



Here is Dave Olsen again. He is showing the difference in size between two geese caught in one net shot. Note the injury to the smaller goose's wing. This picture was taken early in the trapping season before the State's skirted nets arrived. These birds were caught in entanglement type nets. We seldom get this type injury with the small mesh skirted nets. Photo by J. Bartee.



This is one of the radios put on Canada geese here by State employee Karl Slagle. He was attempting to track geese to determine if there is an interchange of geese throughout the refuge population or if several small flocks exist. He was not too successful and results were inconclusive. Photo by J. Bartee.

Here are a few geese and ducks getting up out of standing milo. Note the light area in the background where they have it picked clean. The dark color of the heads resulted from flood waters that completely covered it for several days. There was water in some portion of all fields at the time the birds harvested it, but they also took areas where there was no water. Photo by J. Bartee.



The partially albino Canada goose was caught during trapping operations. We wing-clipped it and are holding it in the cripple pen. It will be interesting to see what color change, if any, takes place with next summer's molt. Photo by J. Bartee.

This is about an average catch on the White Barn trap site using two 60 x 30, $1\frac{1}{4}$ mesh skirted nets. Note that the geese are not fighting the net. We quite often observed them eating corn while waiting their turn. Photo by J. Bartee.



3-1750
Form NR-1
(Rev. March 1953)

W A T E R F O W L

REFUGE Swan Lake

MONTHS OF September TO December, 1965

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
	9/5-11	9/12-18	9/19-25	9/26-10/2	10/3-9	10/10-16	10/17-23	10/24-30	10/31-11/6	11/7-13
Swans:										
Whistling Trumpeter										
Geese:										
Canada	200	200	800	45,000	83,000	90,000	107,000	83,000	109,000	119,000
Cackling Brant										
White-fronted					10	20	20	50	50	50
SWAN										
Blue & Snow				1,000	7,000	9,000	17,000	12,500	12,000	13,000
Other										
Ducks:										
Mallard	200	500	3,000	8,000	9,000	15,000	16,000	44,000	50,000	60,000
Black					200	200	200	500	500	500
Gadwall				100	200	200	200	1,000	1,000	900
Baldpate		20	20	100	300	300	500	2,000	2,000	3,000
Pintail	800	5,000	5,000	15,000	11,000	20,000	20,000	18,000	15,000	11,000
Green-winged teal		20	50	200	1,000	1,000	1,500	5,000	9,000	10,000
Blue-winged teal	4,000	6,000	10,000	8,000	7,000	6,000	3,000	2,000	100	100
Cinnamon teal										
Shoveler				50	150	300	100	1,300	1,500	1,200
Wood	500	500	500	500	500	500	600	1,000	1,200	900
Redhead										
Ring-necked										50
Canvasback										
Scaup								200	900	100
Goldeneye										
Bufflehead									10	10
Ruddy										
Other										
Coot		20	1,000	3,000	7,000	10,000	12,000	8,000	3,000	1,000

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Swan LakeMONTHS OF September TO December, 1965

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	11 : 11	12 : 12	13 : 13	14 : 14	15 : 15	16 : 16	17 : 17	18 : 18	waterfowl	Broods:	Estimated
	11/11-20	11/21-27	11/28-12/4	12/5-11	12/12-18	12/19-25	12/26-31	days use	seen	:	total
<u>Swans:</u>											
Whistling Trumpeter											
<u>Geese:</u>											
Canada	96,000	82,000	83,000	106,000	105,000	105,000	89,000		9,122,400		
Cackling Brant											
White-fronted	10	30							1,680		
SWAN											
Blue & Snow	11,000	10,000	6,000	6,000	2,000	5,000	7,000		829,500		
Other											
<u>Ducks:</u>											
Mallard	40,000	67,000	75,000	75,000	43,000	40,000	27,000		4,008,900		
Black	500	200	200	100					21,700		
Gadwall	300								27,300		
Baldpate	1,000	200	100						66,780		
Pintail	7,000	4,000	2,000	5,000	200	200	200		965,300		
Green-winged teal	9,000	3,000	2,000	1,000	800	500	300		310,590		
Blue-winged teal									325,500		
Cinnamon teal											
Shoveler	600	300	100						41,300		
Wood	500	200	200						53,200		
Redhead		20	20						280		
Ring-necked	100	150	100	30					3,010		
Canvasback			10						70		
Scaup	300	800	400						21,000		
Goldeneye											
Bufflehead		20	20	10					490		
Ruddy		10		10					140		
Other											
<u>Coot:</u>	700	200							321,440		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans			
Geese	9,953,580	132,050	
Ducks	5,845,560	88,060	
Coots	321,440	12,000	

SUMMARY

Principal feeding areas Agricultural fields and lake margins.

Principal nesting areas _____

Reported by Robert H. Timmerman

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.

1953

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	Year around resident.				
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow Bald Eagle	None identified Common resident Common resident 1 9/29 57 12/31				
					Reported by <u>Robert H. Zimmerman</u>

INSTRUCTIONS

(1) Species:
 (2) First Seen:
 (3) Peak Numbers:
 (4) Last Seen:
 (5) Production:
 (6) Total:

Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.
 (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
 (4) Last Seen: The last refuge record for the species during the season concerned.
 (5) Production: Estimated number of young produced based on observations and actual counts.
 (6) Total: Estimated total number of the species using the refuge during the period concerned.

WATERFOWL HUNTER KILL SURVEY

Refuge Swan Lake

Year 196⁵

(1) Weeks of Hunting	(2) XXX Total Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/20 - 26	1,269		Canada Goose	1,307	165	1,472		
10/27-11/2	1,242			625	80	705		
11/3 - 9	1,145			466	63	529		
11/10 - 16	1,115			506	70	576		
11/17 - 23	1,004			207	28	235		
11/24 - 30	959			195	55	250		
12/1 - 7	795			245	48	293		
12/8 - 14	882			360	81	441		
12/15 - 21	901			287	65	352		
12/22 -28	1,001			426	79	505		
Totals	10,313			4,624	734	5,358		

*Crippling loss based on the number reported by hunters and is probably not very reliable.

**In addition to the Canada geese there were 138 snow and blue geese harvested on the area this year.
No white-fronts were bagged.

INSTRUCTIONS

Swan Lake

1950
XXV

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$.

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Swan Lake Calendar Year 1965

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		Number	Source	
White-tailed Deer	3,500										300	300	

Remarks:

Lack of snow has prevented an aerial inventory by State Biologists.

Reported by Robert H. Timmerman

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

Refuge Swan Lake Year 19 65

Botulism

Lead Poisoning or other Disease

Period of outbreak None

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized No. Recovered % Recovered

(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.)

Condition of vegetation and invertebrate life _____

Remarks _____

None

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Swan LakeCalendar Year 1965

1. Visits

a. Hunting 9,925 b. Fishing 7,075 c. Miscellaneous 52,000 d. TOTAL VISITS 69,000

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	9,925	1,000	State
Upland Game			
Big Game			
Other			

Number of permanent blinds 60 Hunted

Man-days of bow hunting included above _____

Estimated man-days of hunting on lands adjacent to
refuge 32,000

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	3,000	
Streams and Shores		

1c. Miscellaneous Visits

Recreation 51,600 Official 250
 Economic Use 150 Industrial _____

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. Of GROUPS	NUMBER IN GROUPS
Sportsmen Clubs	5	300		
Bird and Garden Clubs	1	20		
Schools				
Service Clubs	3	55		
Youth Groups	2	12		
Professional-Scientific	1	200		
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	4	Radio Presentations	3
Newspapers (P.R.'s sent to)	8	Exhibits	
TV Presentations		Est. Exhibit Viewers	

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d. 320

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and weekend samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Swan Lake

Year 1965

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
Ladino clover		4 Lb.	90		April	Fair	Drouth after germination.	
Alsike clover		6 Lb.	150		April	Poor	Drouth after germination.	
Ranger alfalfa		10 Lb.	10		April	Poor	Drouth after germination.	
Strawberry clover		10 Lb.	20		April 29	Poor	Drouth after germination.	
'Garrison' creeping foxtail		2.5 Lb.	20		August 24	?	Too soon to tell.	
Mixed quail foods		10 Lb.	6		May	Fair		

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....
Hedgerows, cover patches.....
Food strips, food patches 296.....
Forest plantings.....

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Swan Lake County Chariton State Missouri

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Corn	205	17,000			540	59,000	745	Wheat	660
Soybeans	114	3,400			-	-	114	Ladino clover	350
Milo	23	2,300			212	27,000	235	Alsike clover	120
								Strawberry clover	20
								Ranger alfalfa	55
TOTALS:	342	22,700			752	86,000	1,094		1,205
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations 7 Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,301
Hay - Wild				2. Acreage Cultivated as Service Operation				1,202

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge Swan Lake

Months of January through December, 1965

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn		3,000	3,000				2,930	70		70	
Wheat		800	800		750	50	800	-			

(8) Indicate shipping or collection points _____

(9) Grain is stored at White Barn

(10) Remarks The wheat was hauled from DeSoto Refuge.

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (2) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (3) A total of columns 2 and 3.
- (4) Column 4 less column 5.
- (5) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (6) Nearest railroad station for shipping and receiving.
- (7) Where stored on refuge: "Headquarters granary," etc.
- (8) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

ANNUAL REPORT OF PERSTICIDE APPLICATION

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/1 - 15	Giant Foxtail (Setaria sp)	Corn near Hdq.	300	Atrazine	300 Lbs.	1 Lb/Acre	Water 7 Gal per Acre	Band spray

10. Summary of results (continue on reverse side, if necessary)

Sufficient rainfall was received to make the application a success. Within a few days after the application weeds present began to wilt and turn brown. The cost of the atrazine was \$630.00 plus an estimated \$100.00 additional labor and equipment cost. The total cost for treating 300 acres of corn with a 1/4" band spraying was \$730.00. Satisfactory results were achieved.